TECHNICAL MANUAL

HEADQUARTERS
DEPARTMENT OF THE ARMY

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DATA SHEETS FOR
GUNS, HOWITZERS, AND MORTARS
INTEROPERABLE AMMUNITION

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to Commander, US Army TACOM, Armament Research, Development and Engineering Center, ATTN: AMSTA-AR-LSB, Picatinny Arsenal, New Jersey 07801-5001. A reply will be furnished directly to you.

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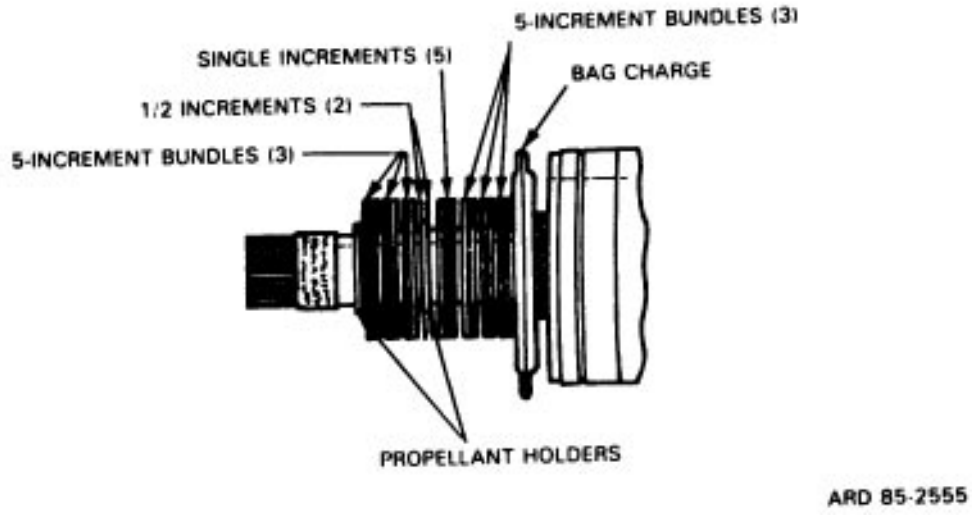
CHAPTER 6
MISCELLANEOUS

CHARGE, PROPELLING, 107 MILLIMETER (4-2-INCH): M36A1 (NL)



Use

This charge is a component of High Explosive Cartridge M329C1 and Illuminating Cartridge M335C1.

Description:

A full charge consists of 36 increments of M8 sheet propellant and a doughnut-shaped bag of M9 flake propellant arranged in the following order: one bag charge, three 5-increment bundles, five single increments, two 1/2-increments, and three 5-increment bundles. This full charge is assembled on the cartridge as issued. Individual increments or bundles may be removed as required for fire adjustment as indicated in the appropriate firing charts, but the bag charge will not be removed at any time. Two wire holders are used to secure the increments to the cartridge container and extension. Removal of the extension when firing reduced charge does not require relocation of the ignition cartridge.

Functioning:

The flash from the detonation of the M2A2 ignition cartridge passes through the vents in the cartridge container, providing direct ignition of the propelling charge.

Tabulated Data:

Propellant type .....M8 and M9
Weight (full charge).....0.27 kg (0.60 lb)
Ignition cartridge used with M2A

Shipping and Storage Data:

Storage class/SCG.....1.1C
DOT shipping class.....A

DOT designation.....PROPELLANT EXPLOSIVES, CLASS A
DODAC .....Not available
Drawing number .....Not available

Limitations:

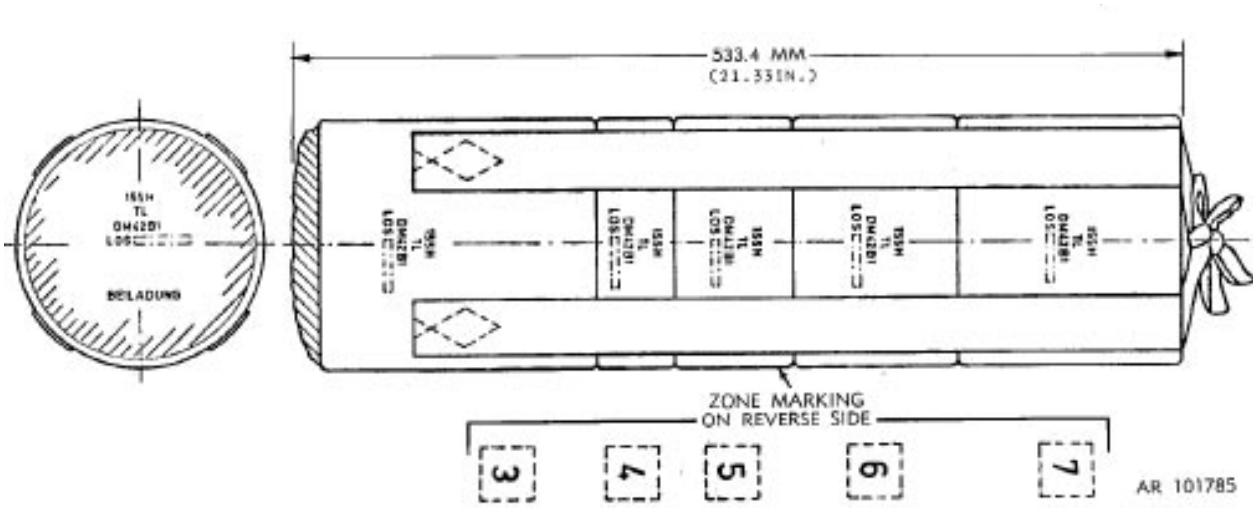
The bag charge of M9 propellant will not be removed at any time.

When firing at a charge below 25-1/2 increments, remove the cartridge container extension. The ignition cartridge does not require repositioning.

References:

TM 9-1015-215-12
TM 9-1300-251-20
TM 9-1320-241-12

CHARGE, PROPELLING, 155 MILLIMETER: DM42B1 (GE)



Use

The DM42B1 propelling charge is a white bag type designed for use in 155mm howitzers for firing in Zones 3, 4, 5, 6, and 7.

Description:

The total charge consists of 6.3 kg (13.8 lb) of propellant and is divided between a base charge and four unequal increments loaded in white cloth bags. The increments are connected by four cloth tapes sewn to the base and tied on top of Increment No. 7. The igniter is 70g (2.45 oz) of clean burning igniter (CBI) in a red or brown cloth pad sewn to the bottom of the base charge. A flash reducer pad containing one ounce (0.30 kg) of potassium nitrate or potassium sulphate is assembled at the front end of the base pad (Increment No. 3). The seams in the base pad are inverted so that the edges of the cloth are inward to reduce residue after firing.

Functioning:

When the weapon is fired, the primer ignites the igniter charge, and the igniter charge ignites the propelling charge. The burning propellant generates rapidly expanding gases to propel the projectile through the barrel and to the velocity required to reach the target. The flash reducer pads serve to limit breech flareback as well as muzzle flash and blast overpressure.

Tabulated Data:

Complete Round:

Type	Separate loading, white bag
Weight	6.3 kg (13.8 lb)
Length	533.4 mm x 138 mm x 138 mm (21.3 x 5.5 x 5.5 in.)
Color	White w/black markings
Cube	0.01 m^3 (0.35 ft^3)
Weapon used with	M109, M109A1, M109A2, M109A3
Cannon	M126, M185

Temperature Limits:

Firing:
Upper limit.....+125°F (+52°C)
Storage:
Upper limit.....+145°F (+63°C)

Packing.....1 charge in metal container, 20 metal containers per pallet
Container:
Weight .....14 kg (30.8 lb)
Dimensions .....698 x 191 x 191 mm (27.9 x 7.6 x 7.6 in.)
Cube.....0.03 m^3 (1.05 ft^3)
Explosive per container .....12.24 kg (29.6 lb)
Pallet:
Dimensions .....698.5 x 803 x 1155 mm (27.94 x 32.12 x 46.2 in.)
Cube.....0.648 m^3 (22.68 ft^3)
Weight .....325 kg (715 lb)

Shipping and Storage Data:

Storage class/SCG.....1.3C
DOT shipping class.....B
DOT designation.....PROPELLANT EXPLOSIVES SOLID CLASS B
DODAC .....Not available
Drawing number .....Not available

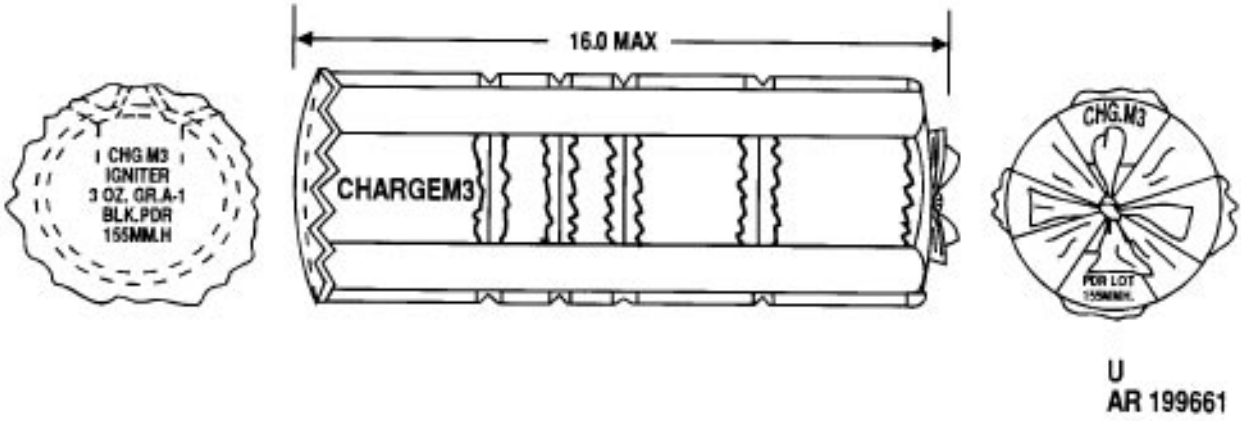
Limitations:

Not available

References:

Not available

CHARGE, PROPELLING, 155 MILLIMETER: M3 SERIES (BE, DE, GR, FR, IT, UK)



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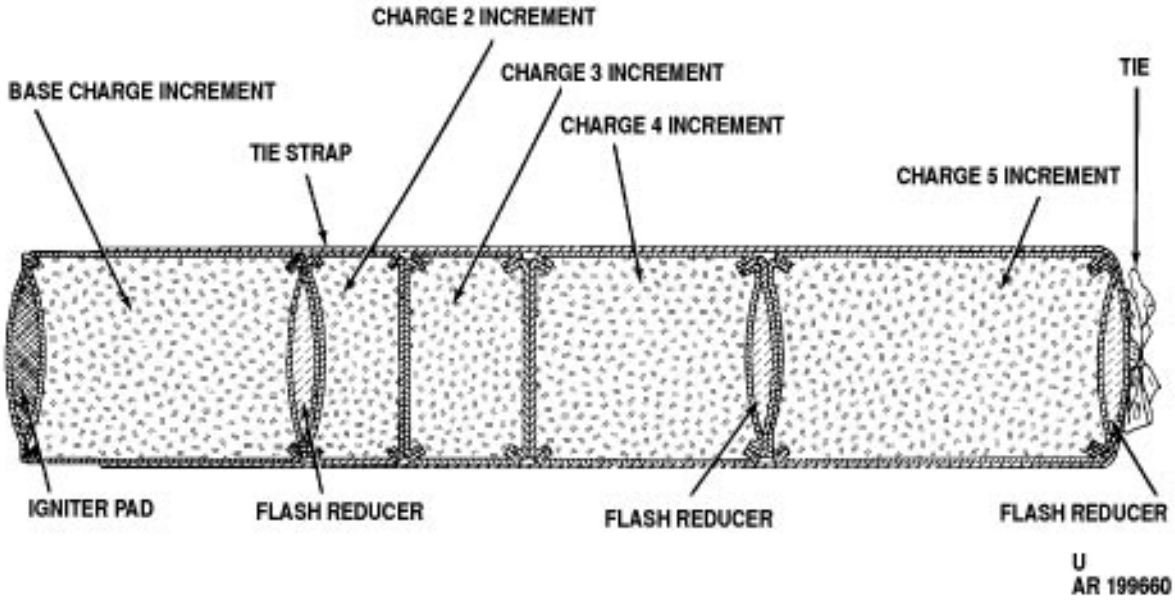

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Type Classification:

M3A1: Std AMCTC 4633 dtd 1966
M3: Std AMCTC 4633 dtd 1966

Use

The M3 series propelling charges are green bag type designed for use in 155mm howitzers for firing in Zones 1 through 5.

Description:

The full charge consists of approximately 5.50 pounds of propellant including a base charge and four unequal increments loaded in cloth bags. The bags are fastened together with four cloth straps sewn to the base and tied on top of Increment 5. Charge M3 is assembled without flash re-

ducer pads. Charge M3A1 includes 3 flash reducer pads containing potassium nitrate or potassium sulphate. A 2-ounce pad is assembled forward of the base charge and there are two 1-ounce pads forward of Increments 4 and 5. The igniter charge of the M3A1 is 3.5 ounces of clean burning igniter (CBI) in a red cloth bag sewn to the rear of the base section. The igniter charge of the M3 is 3 ounces of black powder. The seams of the base charge section are inverted on the M3A1 only so that the edges of the cloth are inside to reduce residue after firing.

Functioning:

The primer ignites the igniter pad, and the igniter charge, in turn, ignites the propellant charge. The burning propellant generates rapidly expanding gases to propel the projectile through the barrel and to the velocity required to reach the target. The flash reducer pads serve to limit breech flareback as well as muzzle flash and blast overpressure.

Difference Between Models:

Model M3 does not include flash reducers. The igniter charge is 3 ounces of black powder instead of CBI, and the base seams are not inverted.

Tabulated Data:

Type .....Separate loading, green bag
Weight.....6.2 lb
Length .....16 in.
Color .....Green w/black markings
Propellant .....M1 (5.6 lb explosive)
Cannon used with.....M1, M1A1, M45, M126, M126A1, M185, M199

Temperature Limits:

Firing:
  Lower limit .....-40°F (-40°C)
  Upper limit.....+125°F (+52°C)
Storage:
  Lower limit .....-80°F (for periods not more than 3 days)
  Upper limit.....+160°F (for periods not more than 4 hr/day)
*Packing.....2 propelling charges in container M14
*Container:
  Weight .....29.0 lb
  Dimensions .....33-3/4 x 6-3/8 x 6-3/8 in.
  Cube.....0.89 cu ft
  Explosive per container .....11.5 lb

*NOTE: See SC for complete packing data including NSN's.

Shipping and Storage Data:

Quantity-distance class 1.3
Storage compatibility group.....C
DOT shipping class.....B
DOT designation.....PROPELLANT EXPLOSIVE SOLID CLASS B WITH CANNON PRIMERS AND IGNITERS
DODAC 1320-D540
Assembly drawing numbers:
M3A1.....8887277
M3.....8864405

Preparation for Firing:

No preparation is required other than adjusting the charge according to the firing zone.

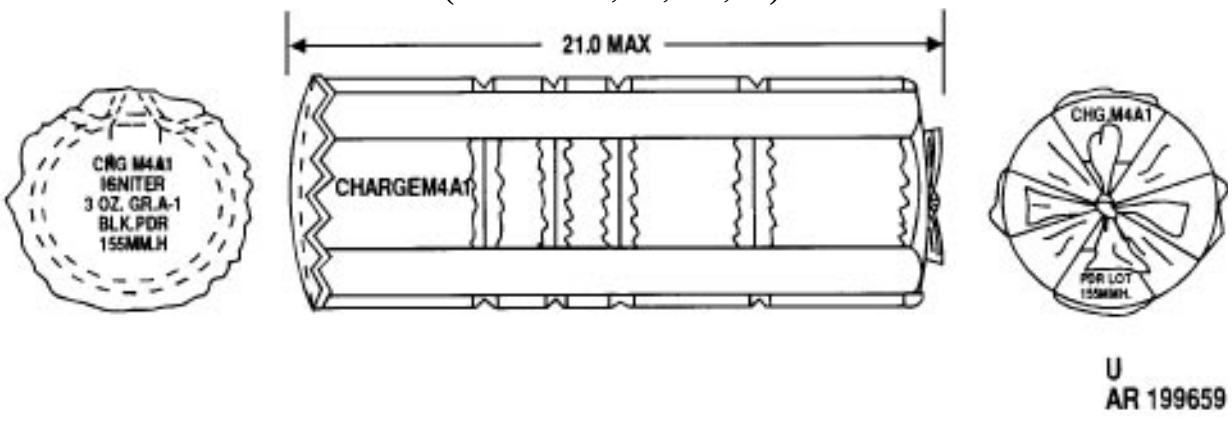
Limitations:

Increments of green bag charges may not be mixed with white bag increments.

References:

DARCOM-P 700-3-3
SB 700-20
SC 1305/30-IL
TM 9-1025-200-12
TM 9-1300-251-20
TM 9-2350-217-10
TM 9-2350-217-10N

CHARGE, PROPELLING, 155 MILLIMETER: M4 SERIES
(M4A1 - DE, GR, FR, BE)
(M4A2 - UK, SP, CA, IT)



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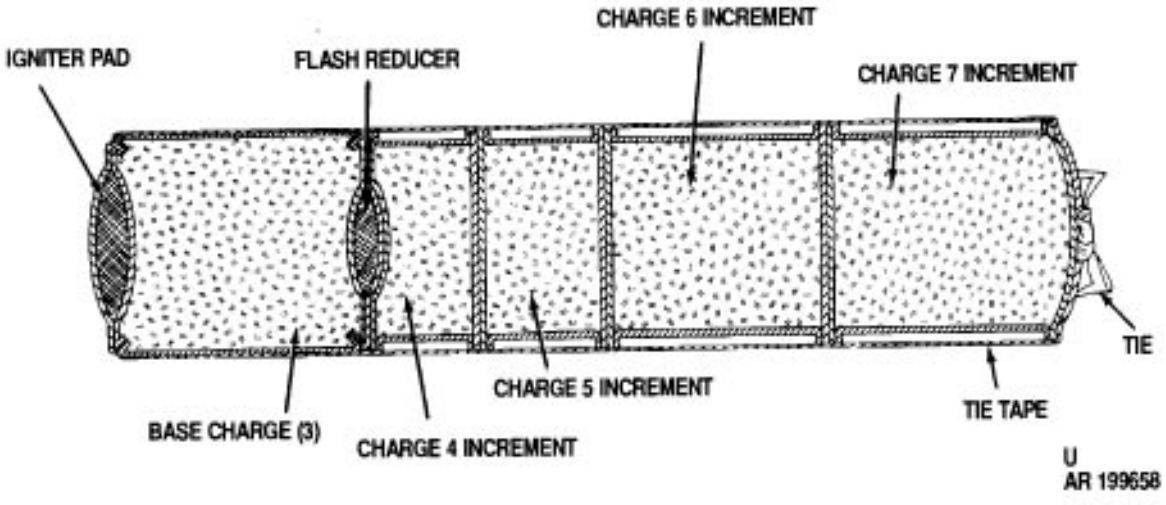

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AR 199658

Type Classification:

M4A2: Std AMCTC 4633 dtd 1966
M4A1: Std AMCTC 4633 dtd 1966

Use

This white bag propelling charge is used in 155mm howitzers for firing in Zones 3, 4, 5, 6, and 7.

Description:

The total charge (M4A2 Prop. Charge) consists of 13 pounds of propellant and is divided between a base charge and four unequal increments loaded in white cloth bags. The increments are connected by four cloth tapes sewn to the base and tied on top of Increment 7. The igniter for Charge M4A2 is 3.5 ounces of clean burning igniter (CBI) in a red cloth pad sewn to the bottom of the base charge. A flash reducer pad containing one ounce of potassium nitrate or potassium sulphate is assembled at the front end of the base increment (Increment 3). The seams of the base pad are inverted so that the edges of the cloth are inward to reduce residue after firing.

Functioning:

When the weapon is fired, the primer ignites the igniter charge, and the igniter charge ignites the propelling charge. The burning propellant generates rapidly expanding gases to propel the projectile through the barrel and to the velocity required to reach the target. The flash reducer pads serve to limit breech flareback as well as muzzle flash and blast overpressure.

Difference Between Models:

Model M4A1 is similar to Model M4A2 except that the igniter charge is 3.0 ounces of black powder instead of CBI, the base charge seams are not inverted, and the charge does not include a flash reducer. Flash Reducer M2 may be used with Charge M4A1 when required, but is a separate item of issue.

Tabulated Data:

Complete Round:

Type	Separate loading, white bag
Weight	14.0 lb
Length	21.0 in. max
Color	White w/black markings
Propellant	M1 (13.4 lb explosive)
Cannon used with	M1, M1A1, M45, M126, M126A1, M185, M199

Temperature Limits:

Firing:

Lower limit	-40°F (-40°C)
Upper limit	+125°F (+52°C)

Storage:

Lower limit	-80°F (for periods not more than 3 days)
Upper limit	+140°F (for periods not more than 4 hr/day)

*Packing1 charge in metal container M13

*Container:

Weight	30.5 lb
Dimensions	27-3/4 x 7-3/8 x 7-3/8 in.
Cube	0.87 cu ft
Explosive per container	13.7 lb

*NOTE: See SC for complete packing data including NSN's.

Shipping and Storage Data:

Quantity-distance class	1.3
Storage compatibility group	C

DOT Shipping Class:
M4A2.....B
M4A1.....B
DOT Designation:
M4A2.....PROPELLANT EXPLOSIVES SOLID CLASS B
M4A1.....PROPELLANT EXPLOSIVES SOLID CLASS B
DODAC 1320-D541
Assembly drawing numbers:
M4A2.....9207624
M4A1.....71-9-180

Preparation for Firing:

No preparation is required except adjustment of the charge according to the firing zone intended.

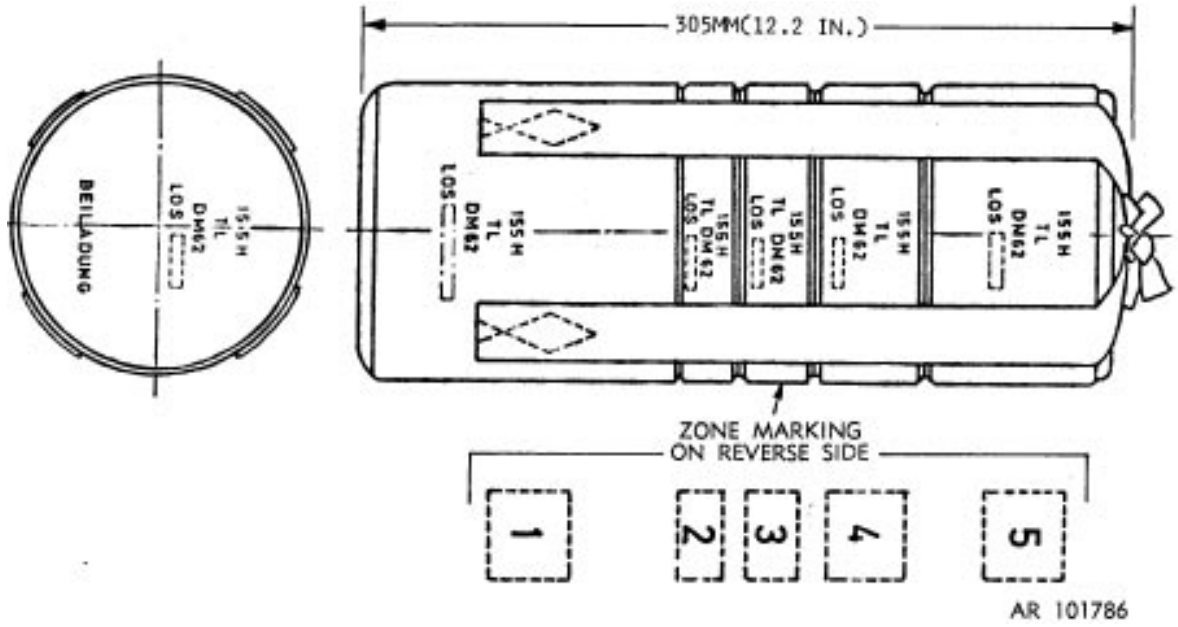
Limitations:

Erratic range results may be expected when firing M4 series charge in Zones 3 and 4, so Green Bag M3 series charge should be used for those zones when available.

References:

DARCOM-P 700-3-3
SB 700-20
SC 1305/30-IL
TM 9-1025-200-12
TM 9-1300-251-20
TM 9-2350-217-10
TM 9-2350-217-10N

CHARGE, PROPELLING, 155 MILLIMETER: DM62 (GE)



Use

The DM62 propelling charge is a green bag type designed for use in 155mm howitzers for firing in Zones 1 through 5.

Description:

The full charge consists of propellant including a base charge and four unequal increments loaded in cloth bags. The bags are fastened together with four cloth straps sewn to the base and tied on top of Increment No. 5 (1 to 1.5 percent potassium sulphate is incorporated in propellant grains). The igniter charge of the DM62 is 80g (2.8 oz) of clean burning igniter (CBI) in a red or brown cloth bag sewn to the rear of the base section. The seams of the base charge section are inverted so that the edges of the cloth are inside to reduce residue after firing.

Functioning:

The primer ignites the igniter pad, and the igniter charge, in turn, ignites the propellant charge. The burning propellant generates rapidly expanding gases to propel the projectile through the barrel and to the velocity required to reach the target or function point.

Tabulated Data:

Type .....Separate loading, Zones 1 - 5, green bag
Weight.....2.380 kg (5.2 lb)
Length .....305 mm (12.2 in.)
Color .....Green w/black markings
Propellant .....M30A1, Type II
Weapon used with.....M109, M109A1, M109A3
Cannon .....M126 and M185

Temperature Limits:

Firing:
- Upper limit.....+125°F (+52°C)

Storage:
- Upper limit.....+145°F (+63°C)

Packing.....2 charges per metal container, 20 containers (40 charges) per pallet

Container:
- Weight .....11 kg (24.2 lb)
- Dimensions .....950 x 170 x 170 mm (38 x 6.8 x 6.8 in.)
- Cube.....0.027 m^3 (0.96 ft^3)
- Explosive per container .....5.2 kg (11.4 lb)

Pallet:
- Dimensions .....952 x 880 x 880 mm (38 x 35 x 35 in.)
- Cube.....0.73 m^3 (25.5 ft^3)
- Weight .....255 kg (561 lb)

Shipping and Storage Data:

Storage class/SCG.....1.3C
DOT shipping class.....B
DOT designation.....PROPELLANT EXPLOSIVE SOLID CLASS B WITH CANNON PRIMERS AND IGNITERS
DODAC .....Not available
Assembly drawing number .....Not available

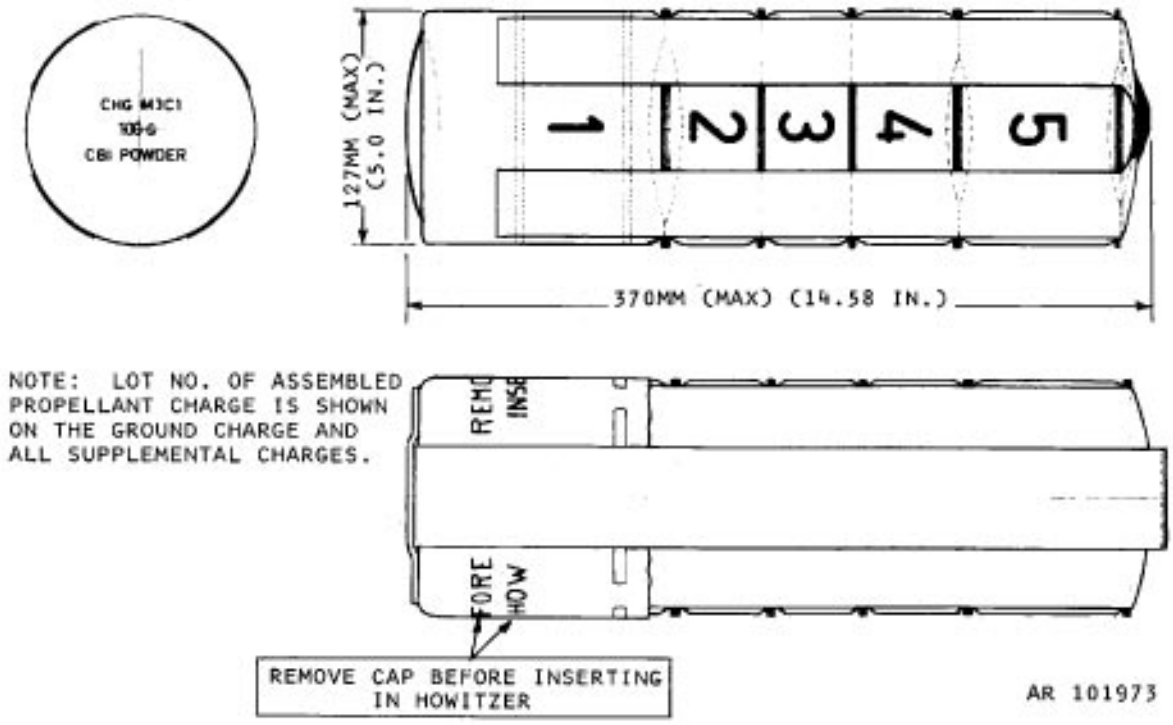
Limitations:

Not available

References:

Not available

CHARGE, PROPELLING, 155 MILLIMETER: M3C1 (NL)



Use

The M3C1 propelling charge is a green bag type designed for use in 155mm howitzers for firing in Zones 1 through 5.

Description:

The full charge consists of approximately 2.8 kg (6.2 lb) of propellant including a base charge and four unequal increments loaded in cloth bags. The bags are fastened together with four cloth straps sewn to the base and tied on top of Increment No. 5. Charge M3C1 includes three flash reducer pads containing potassium nitrate or potassium sulphate. A two ounce pad is assembled forward of the base charge and there are two 1-ounce pads forward of Increments 4 and 5. The igniter charge of the M3C1 is 3.5 ounces of clean burning igniter (CBI) in a red cloth bag sewn to the rear of the base section. The seams of the base charge section are inverted so that the edges of the cloth are inside to reduce residue after firing.

Functioning:

The primer ignites the igniter pad, and the igniter charge, in turn, ignites the propellant charge. The burning propellant generates rapidly expanding gases to propel the projectile through the barrel and to the velocity required to reach the target or function point. The flash reducer pads serve to limit breech flareback as well as muzzle flash and blast overpressure.

Tabulated Data:

Type .....Separate loading, green bag
Weight.....28 kg (6.2 lb)
Length .....370 mm (14.58 in.)
Color .....Green w/black markings
Propellant .....M1 (5.6 lb explosive)
Cannon used with.....M126, M126A1, M185

Temperature Limits:

Firing:
  Lower limit .....-40°F (-40°C)
  Upper limit.....+125°F (+52°C)
Storage:
  Lower limit .....-80°F (-62°C) (for periods not more than 3 days)
  Upper limit.....+160°F (+70°C) (for periods not more than 4 hr/day)

Packing6 propelling charges in container

Container:
  Weight .....31.8 kg (70.1 lb)
  Dimensions .....630 x 525 x 185 mm (24.8 x 20.6 x 7.3 in.)
  Cube.....0.06 m^3 (2.14 ft^3)
  Explosive per container .....15.7 kg (34.5 lb)

Shipping and Storage Data:

Storage class/SCG1.3C
DOT shipping class.....B
DOT designation.....PROPELLANT EXPLOSIVE SOLID CLASS B WITH CANNON PRIMERS AND IGNITERS
DODAC .....Not available
Assembly drawing number .....Not available

Preparation for Firing:

No preparation is required other than adjusting the charge according to the firing zone.

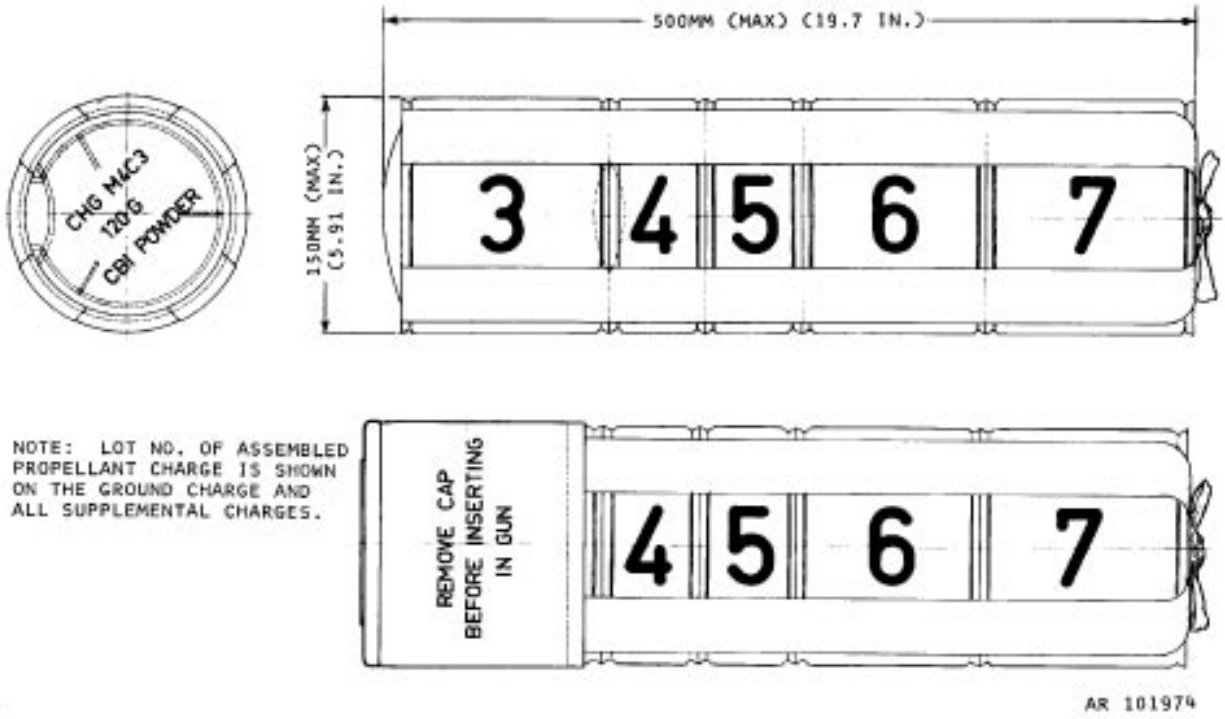
Limitations:

Increments of green bag charges may not be mixed with white bag increments.

References:

Not available

CHARGE, PROPELLING, 155 MILLIMETER: M4C3 (NL)



Use

This white bag propelling charge is used in 155mm howitzers for firing in Zones 3, 4, 5, 6, and 7.

Description:

The total charge consists of 13.4 pound of propellant and is divided between a base charge and four unequal increments loaded in white cloth bags. The increments are connected by four cloth tapes sewn to the base and tied on top of Increment 7. The igniter for Charge M4C3 is 3.5 ounces of clean burning igniter (CBI) in a red cloth pad sewn to the bottom of the base charge. A flash reducer pad containing one ounce of potassium nitrate or potassium sulphate is assembled at the front end of the base increment (Increment 3). The seams of the base pad are inverted so the edges of the cloth are inside to reduce residue after firing.

Functioning:

When the weapon is fired, the primer ignites the igniter charge, and the igniter charge ignites the propelling charge. The burning propellant generates rapidly expanding gases to propel the projectile through the barrel and to the velocity required to reach the target or function point. The flash reducer pads serve to limit breech flareback as well as muzzle flash and blast overpressure.

Tabulated Data:

Complete Round:

Type	Separate loading, white bag
Weight	6.4 kg (14.0 lb)

Length.....500 mm (19.7 in.) (max)
Propellant.....M1 (13.4 lb explosive)
Cannon used with M126, M126A1, M185

Temperature Limits:

Firing:
Lower limit .....-40°F (-40°C)
Upper limit.....+125°F (+52°C)
Storage:
Lower limit .....-80°F (-62°C) (for periods not more than 3 days)
Upper limit.....+140°F (+60°C) (for periods not more than 4 hr/day)
Packing.....4 propelling charges in container
Container:
Weight .....41 kg (90.4 lb)
Dimensions .....630 x 525 x 185 mm (24.8 x 20.6 x 7.3 in.)
Cube.....0.06 m^3 (2.14 ft^3)
Explosive per container .....24.9 kg (54.8 lb)

Shipping and Storage Data:

Storage class/SCG.....1.3C
DOT shipping class.....B
DOT designation.....PROPELLANT EXPLOSIVE SOLID CLASS B
DODAC .....Not available
Assembly drawing number .....Not available

Preparation for Firing:

No preparation is required except adjustment of the charge according to the firing zone intended.

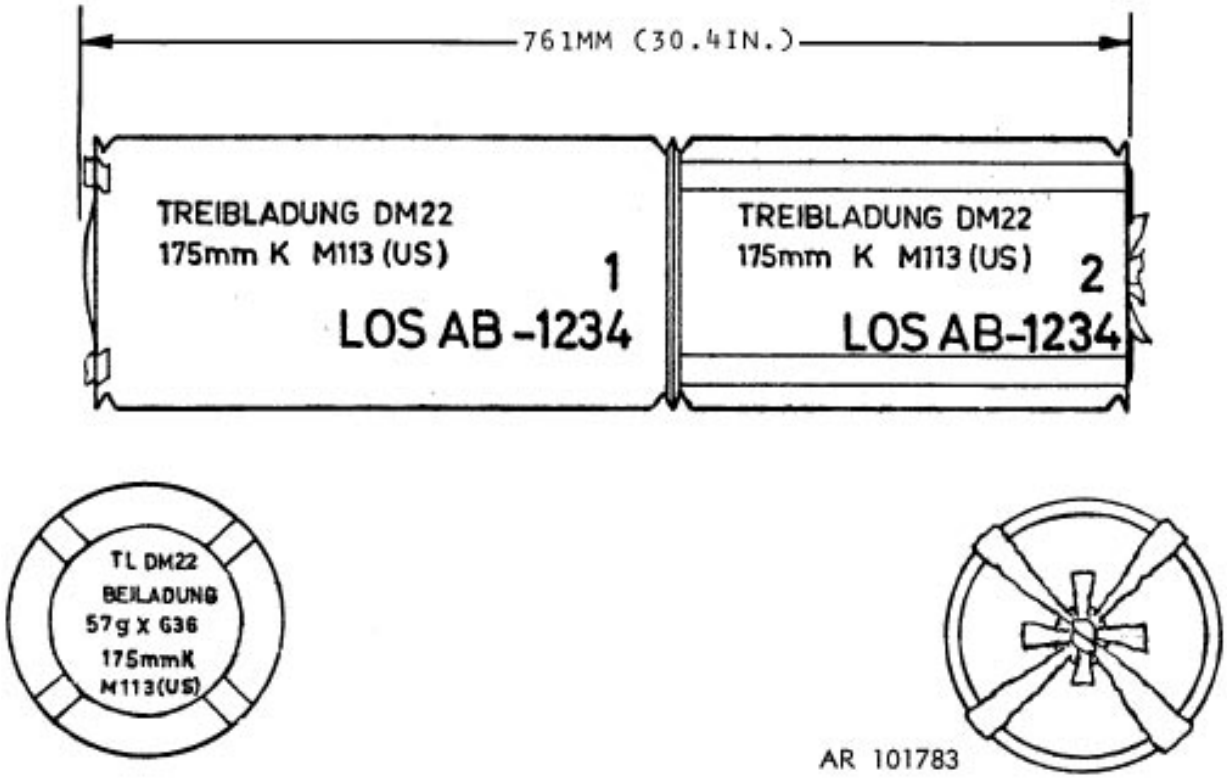
Limitations:

Erratic range results may be expected when firing M4C3 propelling charge in Zones 3 and 4, so Green bag M3C1 charge should be used for those zones when available.

References:

Not available

CHARGE, PROPELLING, 175 MILLIMETER: DM22 (GE)



Use

DM22 propelling charge is used in the 175mm M107 Self-Propelled Weapon System.

Description:

The charge is a two-increment white bag type. The bags are tied together by four tying straps attached to the top of Increment No. 1 and knotted on top of Increment No. 2. Each propelling charge has an igniter core assembly extending through the center of the charge. The core assembly consists of two rigid polyurethane tubes containing bagged igniter cores of black powder. A red or brown cloth igniter pad, filled with black powder, is sewn to the base of Increment No. 1. The igniter core for Increment No. 1 is sewn to the igniter base pad and is loose in the Increment No. 1 igniter tube. The core for Increment No. 2 is tied inside the igniter tube. An igniter protective cap is placed over the igniter base pad for protection in shipment and storage.

Functioning:

When the primer is initiated in the breechblock of the gun, flash ignites the black powder in the igniter pad. The flame proceeds through the powder in the igniter tubes to accomplish uniform ignition of the propelling charge through both increments. The burning propellant generates rapidly expanding gases to propel the projectile through the gun tube at the velocity required to reach the target.

Tabulated Data:

Propelling Charge:
- Type ..... Separate loading propelling charge, white bag
- Weight ..... 17 kg (37.4 lb)
- Length ..... 761 mm (30.4 in.)
- Diameter ..... 203 mm (8.12 in.)
- Cannon (weapon) used with M113, M113A1, (M107)

Propellant:
- Composition M6
- Grain type ..... 7 perforated cylinder, L/D = 2.35
- Weight ..... 16 kg (35.2 lb)
- Web ..... 2 mm (0.08 in.)
- Primer ..... DM191A1 (GE M107)
- Primer ..... M82 (US M107)

Temperature Limits:

Firing:
- Upper limit ..... +125°F (+52°C)

Storage:
- Upper limit ..... +145°F (+63°C)

Packing (Propelling Charge) ..... 1 charge per metal container; 12 metal containers per pallet

Container:
- Weight ..... 27.8 kg (61.1 lb)
- Dimensions ..... 950 x 250 x 250 mm (38 x 10 x 10 in.)
- Cube ..... 0.06 m^3 (2.1 ft^3)

Pallet:
- Weight ..... 353 kg (776.6 lb)
- Dimensions ..... 950 x 750 x 1155 mm (38 x 30 x 46.2 in.)
- Cube ..... 0.82 m^3 (28.7 ft^3)

Shipping and Storage Data:

Storage class/SCG 1.3C
DOT shipping class ..... B
DOT designation ..... PROPELLANT EXPLOSIVES SOLID CLASS B
DODAC ..... Not available

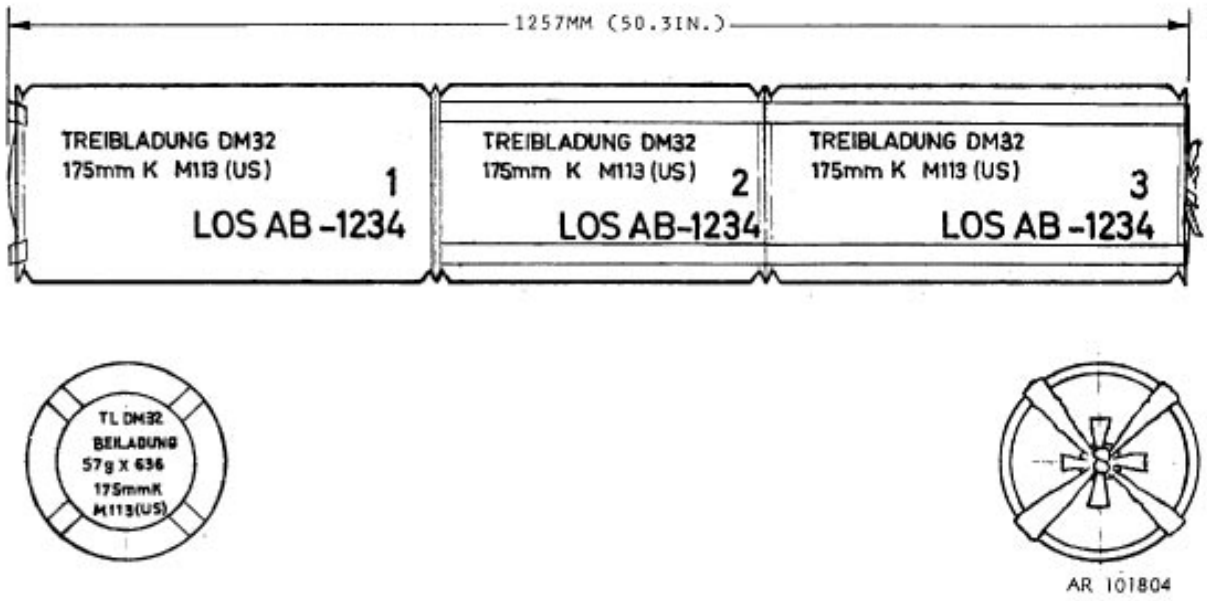
Limitations:

Not available

References:

Not available

CHARGE, PROPELLING, 175 MILLIMETER: DM32 (GE)



Use

DM32 propelling charge is used in the 175mm M107 Self-Propelled Weapon system.

Description:

The charge is a three-increment white bag type, multiperforated Propellant M6 in acrylic viscose-rayon bags. The bags are tied together by four tying straps attached to the top of Increment No. 1 and knotted on top of Increment No. 3. The tying straps are reinforced by cord tied tightly around the junction of Increment Nos. 2 and 3. Each propelling charge has an igniter core assembly extending through the center of the charge. The core assembly consists of three rigid polyurethane tubes containing bagged igniter cores of black powder. The igniter tubes for Zones 1 and 3 contain bell shaped ends which assemble over the ends of the igniter tube in Increment No. 2. A red or brown cloth igniter pad, filled with black powder, is sewn to the base of Increment No. 1. The igniter core for Increment No. 1 is sewn to the igniter base pad and is loose in the Increment No. 1 igniter tube. The core for Increment Nos. 2 and 3 are tied inside the igniter tubes for these increments. An igniter protective cap is placed over the igniter base pad for protection in shipment and storage. An additive jacket is issued separately for assembly over Increment No. 3 when firing full charge. All charges are packed with a percussion primer. The flash reducer which is a part of the DM32, is located between Increment No. 2 and No. 3.

A bore-wear-reducing additive jacket, assembled to Increment No. 3, is used when firing a full charge. It consists of two 267mm x 460mm (10.6 x 18.4 in.) cloth-backed sheets of additive mixture stitched together. The additive mixture is composed of 47 percent titanium dioxide and 53 percent wax. The cloth backing, which is bonded to and overlaps the sheets of additive mixture, is stitched to an unbonded tough plastic film casing which serves as a jacket liner. When com-

pressed along the seams, the jacket arches to form a cylinder with a diameter of approximately 190mm (7.6 in.)

NOTE

If the additive mixture is cracked or the plastic sheet is ripped, the additive jacket is still acceptable for use. Use the additive jacket over Increment No. 3 only.

Functioning:

When the primer is initiated in the breechblock of the gun, flash ignites the black powder in the igniter pad. The flame proceeds through the powder in the igniter tubes to accomplish uniform ignition of the propelling charge through both increments. The burning propellant generates rapidly expanding gases to propel the projectile through the gun tube at the velocity required to reach the target. When the additive jacket is employed for full charge firing, the mixture of titanium dioxide and wax in the cloth backing serves to reduce bore wear at the origin of rifling in the cannon.

Tabulated Data:

Propelling Charge:
- Type ..... Separate loading propelling charge, white bag
- Weight ..... 25.4 kg (55.8 lb)
- Length ..... 1257 mm (50.3 in.)
- Diameter ..... 203 mm (8.12 in.)
- Cannon (weapon) used with M113, M113A1, (M107)

Propellant:
- Composition M6
- Grain type ..... 7 perforated cylinder, L/D = 2.35
- Weight ..... 24.9 kg (55 lb)
- Web ..... 2 mm (0.08 in.)
- Primer ..... DM191A1 (GE M107)
- Primer ..... M82 (US M107)

Temperature Limits:

Firing:
- Upper limit ..... +125°F (+52°C)

Storage:
- Upper limit ..... +145°F (+63°C)

Packing (Propelling Charge) ..... 1 charge with additive jacket in metal container; 12 metal containers per pallet

Container:
- Weight ..... 44 kg (96.8 lb)
- Dimensions ..... 1400 x 250 x 250 mm (56 x 10 x 10 in.)
- Cube ..... 0.0875 m^3 (3.06 ft^3)

Pallet:
- Weight ..... 548 kg (1.205 lb)

Dimensions .....1400 x 760 x 1130 mm (56 x 30 x 45.2 in.)
Cube.....1.2 m^3 (42.0 ft^3)

Shipping and Storage Data:

Quantity-distance class 1.1
Storage compatibility group.....C
DOT shipping class.....B
DOT designation.....PROPELLANT EXPLOSIVES SOLID CLASS B
DODAC .....Not available

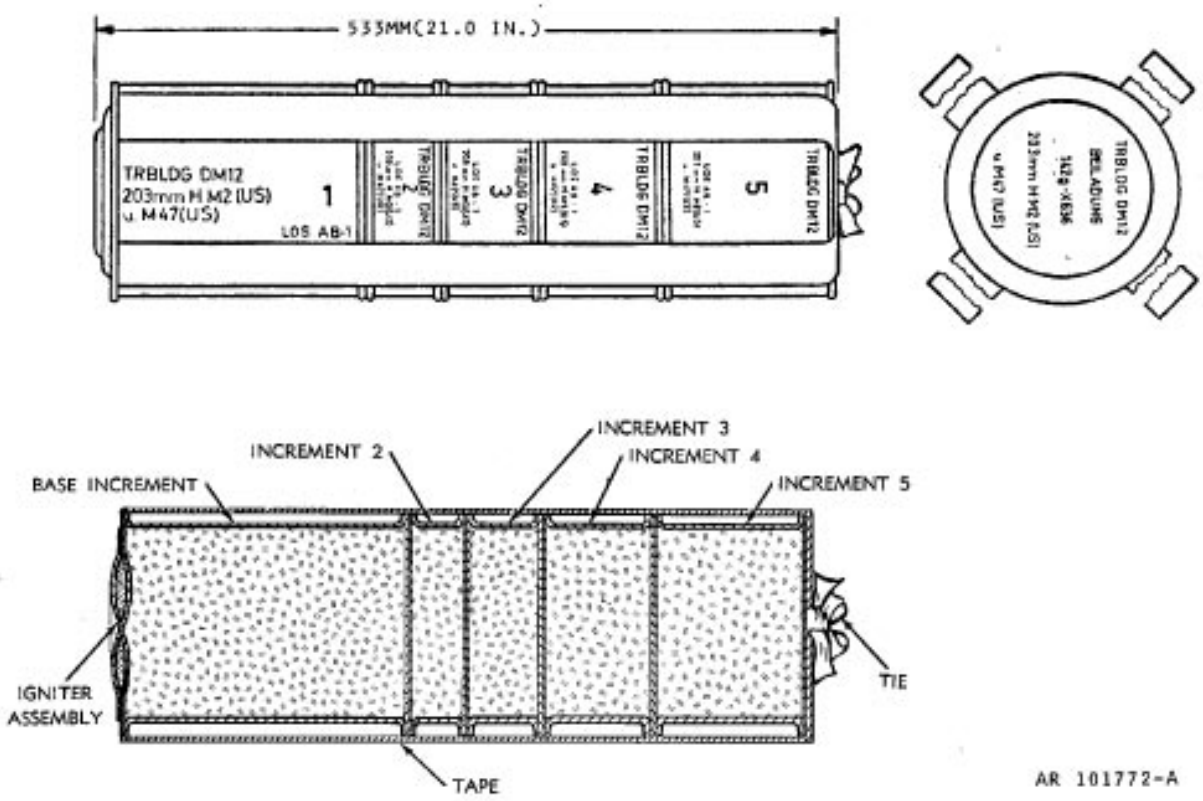
Limitations:

Not available

References:

Not available

CHARGE, PROPELLING, 203 MILLIMETER (8-INCH): DM12 (GE)



Use

203mm (8-in.) Green Bag Propelling Charge DM12 is used for zone firing with Charges 1 to 5 in M110 Howitzer Weapons System.

Description:

The charge consists of a base section (Charge 1) and four unequal increments (2 thru 5) of propellant in green cloth bags. The increments are assembled end to end in sequence, and held in place by four tying straps sewn to the base of Increment 1 and tied over the top of Increment 5. An igniter pad containing 142g (4.9 oz) of black powder is sewn to the base of Increment 1. Each increment of the charge and the igniter pad is identified by black stencil markings.

Functioning:

The flash from the primer ignites the black powder igniter pad, which in turn ignites the propellant in the charge. The burning propellant generates gases which force the projectile out of the gun tube at a velocity required to reach the target.

Tabulated Data:

Type .....Separate loading propelling charge, green bag
Weight.....6.1 kg (13.4 lb)
Length .....533 mm (21.0 in.) max
Diameter.....165 mm (6.50 in.) max
Color .....Green w/black marking
Propellant:
  Composition.....M1
  Grain type .....1 perforated L/D = 4.6
  Weight .....6.2 kg (13.6 lb)
  Web.....0.43 mm (0.017 in.)
Weapon M110, M110A1
Cannon M2A2 (M2A1E1), M201

Temperature Limits:

Firing:
  Upper limit.....+125°F (+52°C)
Storage:
  Upper limit.....+145°F (+63°C)
Packing.....1 charge in metal container; 16 containers per pallet
Container:.....M18A2
  Weight .....15.4 kg (34 lb)
  Dimensions .....214 x 668 mm (8.2 x 26.2 in.)
  Cube.....0.029 m^3 (1.0 ft^3)
Pallet:
  Weight .....258.7 kg (570 lb) (approx)
  Dimensions .....667.5 x 860 x 1011 mm (max) (26.4 x 33.9 x 39.8 in.)
  Cube.....0.58 m^3 (20.3 ft^3)

Shipping and Storage Data:

Storage class/SCG.....1.3C
DOT shipping class.....B
DOT designation.....PROPELLANT EXPLOSIVES SOLID CLASS B
DODAC .....Not available
Drawing number .....Not available

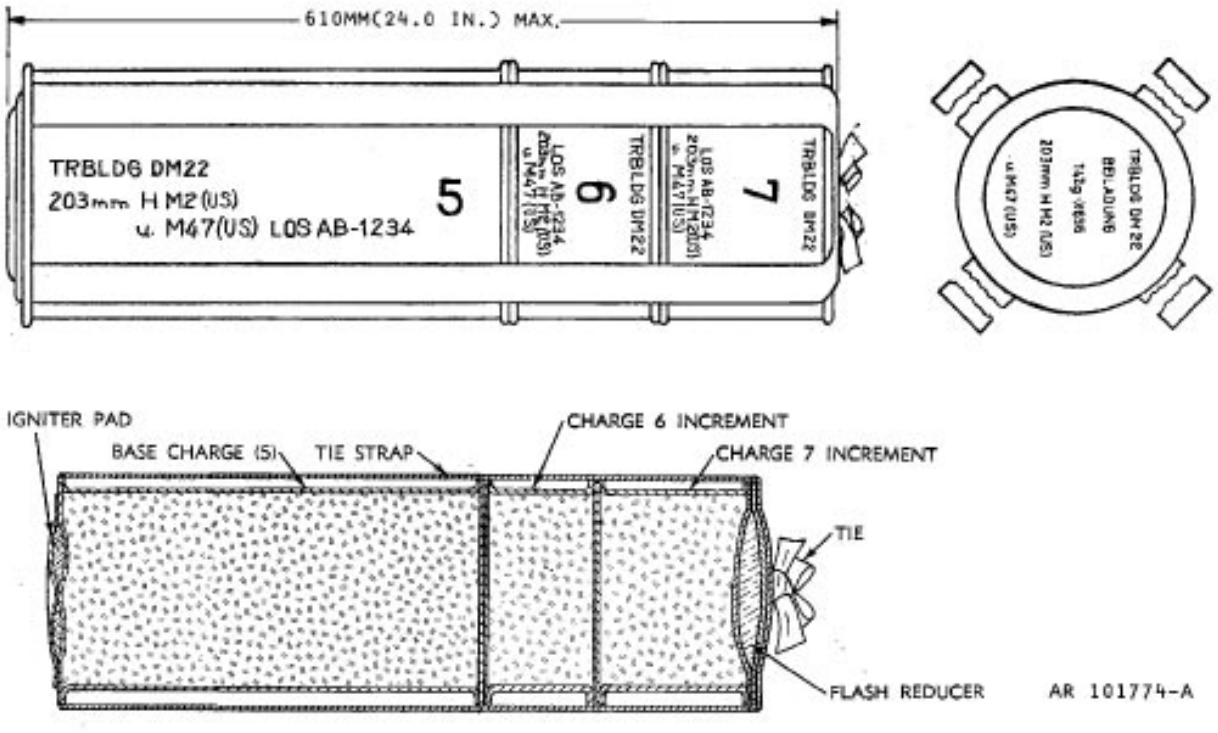
Limitations:

Not available

References:

Not available

CHARGE, PROPELLING, 203 MILLIMETER (8-INCH): DM22 (GE)



Use

203mm (8-in.) White Bag Propelling Charge DM22 is used for zone firing with Charges 5 thru 7 in M110 Howitzer Weapons System.

Description:

The charge consists of a base section (Charge 5) and two unequal increments (Charges 6 and 7) for zone firing. The increments are assembled end to end in sequence, and held in place by four tying straps sewn to the base of Increment 5 and tied over the top of Increment 7. A red cloth igniter pad containing 142g (4.97 oz) of black powder is sewn to the base of Increment 5. Each increment of the charge and the igniter pad is identified by black stencil markings. In use a DM1 Flash Reducer is inserted under the tie straps at the forward end of the charge. Flash Reducer DM1 is a separate item of issue to be used when firing all zones of the DM22 Propelling charge. It consists of a square pad of red cloth containing a 453.6g (1 lb) mixture of potassium sulfate and black powder.

Functioning:

The flash from the primer ignites the black powder igniter pad, which in turn ignites the propellant in the charge. The burning propellant generates gases which force the projectile out of the gun tube at a velocity required to reach the target. The flash reducer serves to reduce the amount of blast overpressure at the muzzle. Although the flash reducer increases the quantity of smoke, it must be used in daylight firing as well as night firing unless it is tactically impossible.

Tabulated Data:

Type .....Separate loading, white bag
Weight.....13.6 kg (30 lb)
Length .....610 mm (24.0 in.) max
Diameter.....203.8 mm (8.12 in.) max
Color .....White w/black markings
Propellant:
  Composition.....M1
  Grain type .....7 perforated cylinder
  Weight .....12.9 kg (28.5 lb)
  Web.....0.109 mm (0.004 in.
Primer.....M82
Weapon M110, M110A1
Cannon M2A2 (M2A1E1), M201

Temperature Limits:

Firing:
  Upper limit.....+125°F (+52°C)
Storage:
  Upper limit.....+145°F (+63°C)
Packing.....1 charge in metal container; 12 containers per pallet
Container:.....M19A2
  Weight .....23.7 kg (52 lb)
  Dimensions .....250 x 744 mm (9.8 x 29.3 in.)
  Cube.....0.046 m^3 (1.6 ft^3)
Pallet:
  Weight .....292 kg (644 lb) (approx)
  Dimensions .....755 x 744 x 1151 mm (max) (29.7 x 29.3 x 45 in.)
  Cube.....0.64 m^3 (22.6 ft^3)

Shipping and Storage Data:

Propelling Charge:
  Storage class/SCG 1.3C
  DOT shipping class .....B
  DOT designation.....PROPELLANT EXPLOSIVE - SOLID CLASS B
  DODAC .....Not available
  Drawing number .....Not available
DM1 Flash Reducer:
  Storage class/SCG 1.1D
  DOT shipping class .....A
  DOT designation.....BLACK POWDER
  DODAC .....Not available
  Drawing number .....Not available

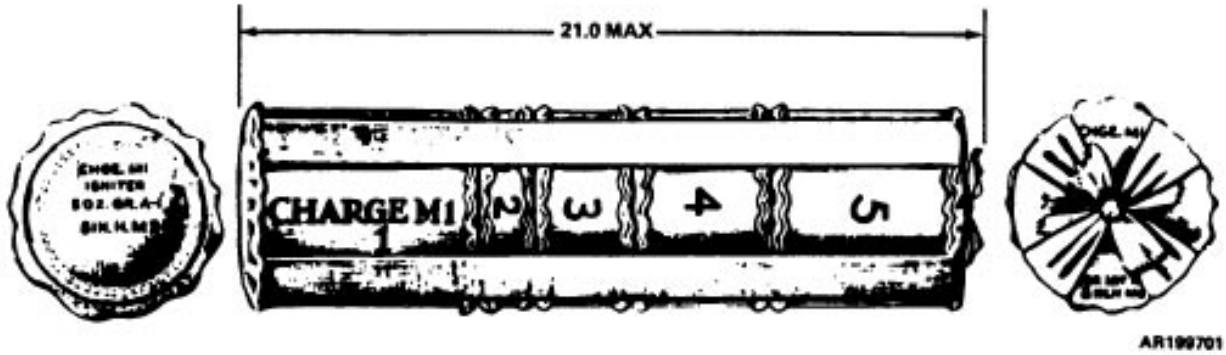
Limitations:

The DM22 propelling charge must be used with a DM1 flash reducer. If flash reducers are not available, occasional blast overpressure and excessive flash may be experienced.

References:

Not available

CHARGE, PROPELLING, 203 MILLIMETER (8-INCH): M1
(NL*, BE*, IT**, DE, GR*, UK*, SP)



Type Classification

*US manufacture
**Some US manufacture

Use

203mm (8-in.) Green Bag Propelling Charge M1 is used for zone firing with Charges 1 thru 5 in 203mm (8-in.) howitzer cannons.

Description:

The charge consists of a base section (Charge 1) and four unequal increments (2 thru 5) of propellant M1 in green cloth bags. The increments are assembled end to end in sequence, and held in place by four tying straps sewn to the base of Increment 1 and tied over the top of Increment 5. A red igniter pad containing 140g (5 oz) of black powder is sewn to the base of Increment 1. Each increment of the charge and the igniter pad is identified by black stencil markings.

Functioning:

The flash from the primer ignites the black powder igniter pad, which in turn ignites the propellant in the charge. The burning propellant generates gases which force the projectile out of the gun tube at a velocity required to reach the target.

Tabulated Data:

Type .....Separate loaded propelling charge, green bag
Weight.....6.8 kg (15.0 lb)
Length .....535 mm (21 in.) max
Diameter.....165.1 mm (6.50 in.)
Color .....Green w/black markings
Propellant:
  Composition.....M1
  Grain type .....1 perforated L/D = 4.6
  Weight .....6.18 kg (13.6 lb)
  Web.....0.43 mm (0.017 in.)

Primer.....MK2A4, M82
Weapon M110, M110A1
Cannon M2A2, M201

Temperature Limits:

Firing:
  Lower limit .....-40°F (-40°C)
  Upper limit.....+125°F (+52°C)
Storage:
  Lower limit .....-80°F (-62°) (for period of not more than 3 days)
  Upper limit.....+160°F (+71°C) (for not more than 4 hr/day)
Packing1..... charge in metal container; 50 metal containers per pallet
Container:.....M18A2
  Weight .....15.4 kg (34 lb)
  Dimensions .....667.5 x 213.5 x 213.5 mm (8-13/32 x 26-9/32 in.)
  Cube.....0.03 m^3 (1.1 ft^3)
Pallet:
  Weight .....749.1 kg (1650 lb)
  Dimensions .....1117.6 x 1320 x 1270 mm (44 x 52 x 50 in.)
  Cube.....1.81 m^3 (67.2 ft^3)

Shipping and Storage Data:

Storage class/SCG.....1.3C
DOT shipping class.....B
DOT designation.....PROPELLANT EXPLOSIVES SOLID CLASS B
DODAC .....Not available
Drawing number .....Not available

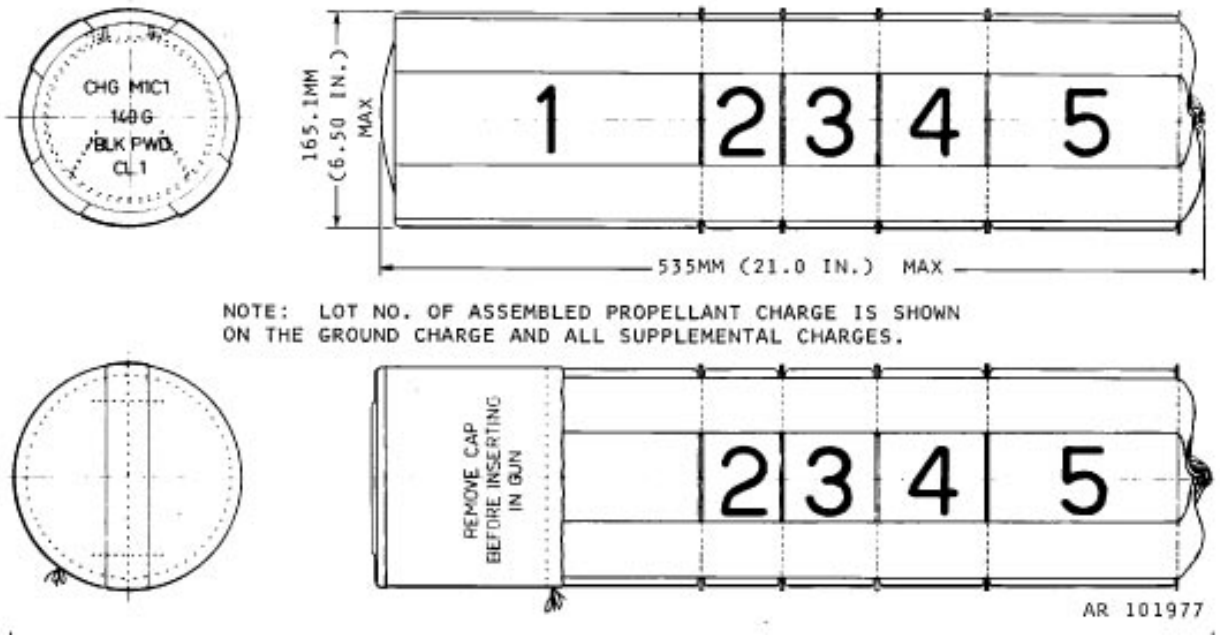
Limitations:

Not available

References:

DARCOM (AMC)-R 700-3-3
SB 700-20
SC 1305/30-IL
TM 9-1300-206
TM 9-1300-250
TM 9-1300-251-20
TM 9-1300-251-34

CHARGE, PROPELLING, 203 MILLIMETER (8-INCH): M1CI (NL)



Use

203mm (8-in.) Green Bag Propelling Charge M1C1 is used for zone firing with Charges 1 thru 5 in 203mm (8-in.) howitzer cannons.

Description:

The charge consists of a base section (Charge 1) and four unequal increments (2 thru 5) of propellant in green cloth bags. The increments are assembled end to end in sequence, and held in place by four tying straps sewn to the base of Increment 1 and tied over the top of Increment 5. A red igniter pad containing 140g (5 oz) of black powder is sewn to the base of Increment 1. Each increment of the charge and the igniter pad is identified by black stencil markings.

Functioning:

The flash from the primer ignites the black powder igniter pad, which in turn ignites the propellant in the charge. The burning propellant generates gases which force the projectile out of the gun tube at a velocity required to reach the target.

Tabulated Data:

Type .....Separate loaded propelling charge, green bag
Weight.....6.8 kg (15.0 lb)
Length .....535 mm (21 in.) max
Diameter.....165.1 mm (6.50 in.)
Color .....Green w/black markings

Propellant:
- Composition.....M1
- Grain type .....1 perforated L/D = 4.6
- Weight .....6.18 kg (13.6 lb)
- Web.....0.43 mm (0.017 in.)

Primer.....M82, MK2A4
Weapon M110, M110A1
Cannon M2A2 (M2A1E1), M201

Temperature Limits:

Firing:
- Lower limit .....-40°F (-40°C)
- Upper limit.....+125°F (+52°C)

Storage:
- Lower limit .....-80°F (-62°) (for period of not more than 3 days)
- Upper limit.....+160°F (+70°C) (for not more than 4 hr/day)

Packing.....4 charges in metal container
Container:
- Weight .....40 kg (88.2 lb)
- Dimensions .....630 x 525 x 185 mm (24.8 x 20.7 x 7.3 in.)
- Cube.....0.06 m^3 (2.14 ft^3)

Shipping and Storage Data:

Storage class/SCG.....1.3C
DOT shipping class.....B
DOT designation.....PROPELLANT EXPLOSIVE SOLID CLASS B
DODAC .....Not available
Drawing number .....Not available

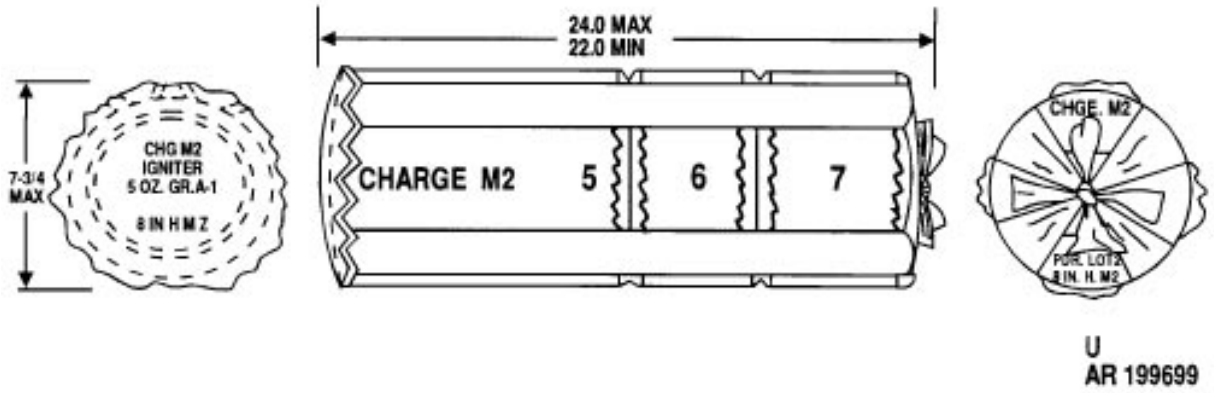
Limitations:

Not available

References:

DARCOM (AMC)-R 700-3-3
SB 700-20
SC 1305/30-IL
TM 9-1300-206
TM 9-1300-250
TM 9-1300-251-20
TM 9-1300-251-34
TM 9-2300-216-10

CHARGE, PROPELLING, 203 MILLIMETER (8-INCH): M2
(NL, BE*, IT**, DE, GR*, UK*, SP)



Type Classification

*US manufacture
**Some US manufacture

Use

203mm (8-in.) White Bag Propelling Charge M2 is used for zone firing with Charges 5 thru 7 in 203mm (8-in.) howitzer cannons.

Description:

The charge consists of a base section (Charge 5) and two unequal increments (Charges 6 and 7) for zone firing. The increments are assembled end to end in sequence, and held in place by four tying straps sewn to the base of Increment 5 and tied over the top of Increment 7. A red cloth igniter pad containing 140g (5 oz) of black powder is sewn to the base of Increment 5. Each increment of the charge and the igniter pad is identified by black stencil markings. In use an M3 flash reducer is inserted under the tie straps at the forward end of the charge. M3 flash reducer is a separate item of issue to be used when firing all zones of the M2 propelling charge. It consists of a square pad of red cloth containing a 460g (1 lb) mixture of potassium sulfate and black powder.

Functioning:

The flash from the primer ignites the black powder igniter pad, which in turn ignites the propellant in the charge. The burning propellant generates gases which force the projectile out of the gun tube at a velocity required to reach the target. The flash reducer serves to reduce the amount of blast overpressure at the muzzle. Although the flash reducer increases the quantity of smoke, it must be used in daylight firing as well as night firing unless it is tactically impossible.

Tabulated Data:

Type .....Separate loaded propelling charge, white bag
Weight.....13.6 kg (30 lb)
Length .....610 mm (24 in.) max
Diameter.....197 mm (7.76 in.) max
Color .....White w/black markings

Propellant:
- Composition.....M1
- Grain type .....7 perforated cylinder
- Weight .....12.9 kg (28.5 lb)
- Web.....1.09 mm (0.043 in.)

Primer.....MK2A4, M82
Weapon M110, M110A1
Cannon M2A2, M201

Temperature Limits:

Firing:
- Lower limit .....-40°F (-40°C)
- Upper limit.....+125°F (+52°C)

Storage:
- Lower limit .....-80°F (-62°) (for period of not more than 3 days)
- Upper limit.....+160°F (+71°C) (for not more than 4 hr/day)

Packing.....1 charge in metal container; 32 metal containers per pallet
Container:.....M19A2
- Weight .....24.5 kg (54 lb)
- Dimensions .....249 x 742 mm (9-13/16 x 29-9/32 in.)
- Cube.....0.046 m^3 (1.6 ft^3)

Pallet:
- Weight .....786.3 kg (1732 lb)
- Dimensions .....1117.6 x 1435 x 1194 mm (44 x 58-1/2 x 47 in.)
- Cube.....2.1 m^3 (70 ft^3)

Shipping and Storage Data:

Storage class/SCG.....1.3C
DOT shipping class.....B
DOT designation.....PROPELLANT EXPLOSIVE SOLID CLASS B
DODAC .....Not available

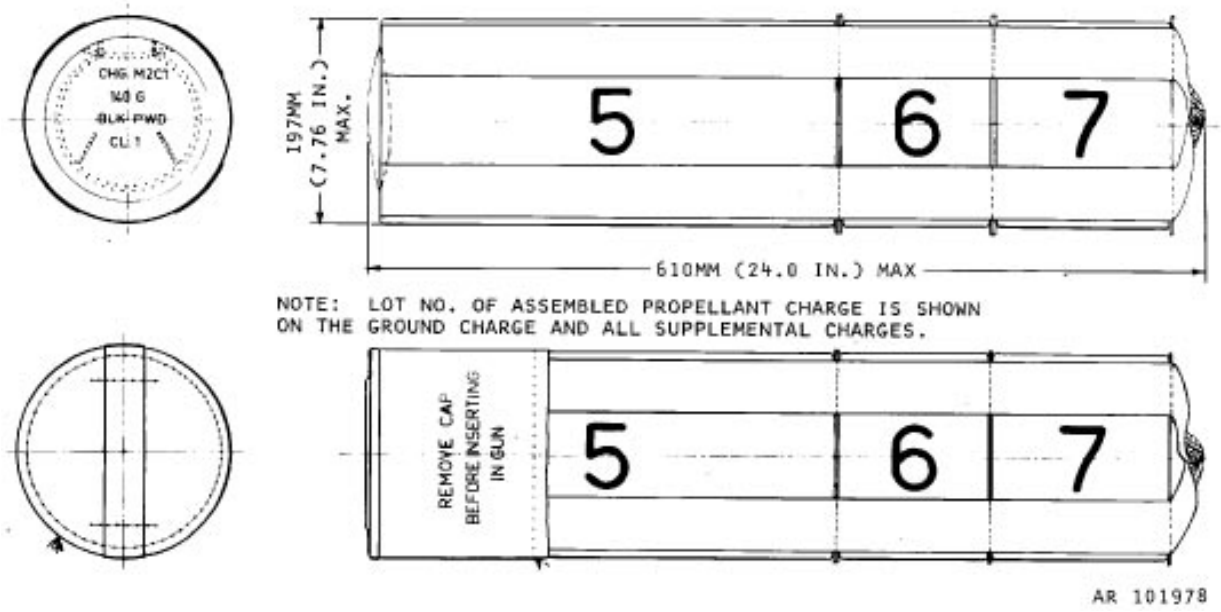
Limitations:

The M2 propelling charge must be used with an M3 flash reducer. If flash reducers are not available, occasional blast overpressure and excessive flash may be experienced.

References:

DARCOM (AMC)-R 700-3-3
SB 700-20
SC 1305/30-IL
TM 9-1300-206
TM 9-1300-250
TM 9-1300-251-20
TM 9-1300-251-34
TM 9-2300-216-10

CHARGE, PROPELLING, 203 MILLIMETER (8-INCH): M2C1 (NL)



Use

203mm (8-in.) White Bag Propelling Charge M2C1 is used for zone firing with Charges 5 thru 7 in 203mm (8-in.) howitzer cannons

Description:

The charge consists of a base section (Charge 5) and two unequal increments (Charges 6 and 7) for zone firing. The increments are assembled end to end in sequence, and held in place by four tying straps sewn to the base of Increment 5 and tied over the top of Increment 7. A red cloth igniter pad containing 140g (5 oz) of black powder is sewn to the base of Increment 5. Each increment of the charge and the igniter pad is identified by black stencil markings. In use a flash reducer is inserted under the tie straps at the forward end of the charge. The flash reducer is a separate item of issue to be used when firing all zones of the M2C1 Propelling Charge. It consists of a square pad of red cloth containing a 460g (1 lb) mixture of potassium sulfate and black powder.

Functioning:

The flash from the primer ignites the black powder igniter pad, which in turn ignites the propellant in the charge. The burning propellant generates gases which force the projectile out of the gun tube at a velocity required to reach the target. The flash reducer serves to reduce the amount of blast overpressure at the muzzle. Although the flash reducer increases the quantity of smoke, it must be used in daylight firing as well as night firing unless it is tactically impossible.

Tabulated Data:

Type .....Separate loaded propelling charge, white bag
Weight.....13.6 kg (30 lb) (approx)
Length .....610 mm (24 in.) max
Diameter.....197 mm (7.76 in.) max
Color .....White w/black markings

Propellant:
- Composition.....M1
- Grain type .....7 perforated cylinder
- Weight .....12.17 kg (26.8 lb) (approx)
- Web.....1.09 mm (0.043 in.)

Primer.....M82, MK2A4
Weapon M110, M110A1
Cannon M2A2, M201

Temperature Limits:

Firing:
- Lower limit .....-40°F (-40°C)
- Upper limit.....+125°F (+52°C)

Storage:
- Lower limit .....-80°F (-62°) (for period of not more than 3 days)
- Upper limit.....+160°F (+71°C) (for not more than 4 hr/day)

Packing.....3 charges in metal container

Container:
- Weight .....55 kg (121.2 lb)
- Dimensions .....630 x 525 x 235 mm (24.8 x 20.7 x 9.3 in.)
- Cube.....0.07 m^3 (2.7 ft^3)

Shipping and Storage Data:

Storage class/SCG.....1.3C
DOT shipping class.....B
DOT designation.....PROPELLANT EXPLOSIVE SOLID CLASS B
DODAC .....Not available
Drawing number .....Not available

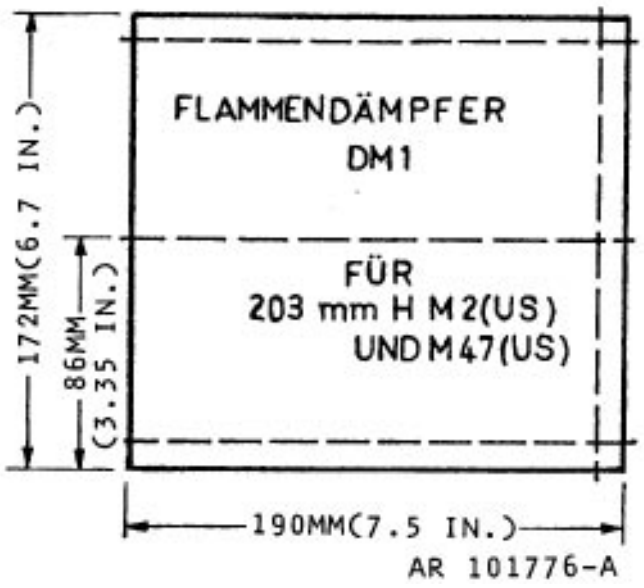
Limitations:

The M2C1 propelling charge must be used with a flash reducer. If flash reducers are not available, occasional blast overpressure and excessive flash may be experienced.

References:

DARCOM (AMC)-R 700-3-3
SB 700-20
SC 1305/30-IL
TM 9-1300-206
TM 9-1300-250
TM 9-1300-251-20
TM 9-1300-251-34
TM 9-2300-216-10
TM 9-2350-210-10

REDUCER, FLASH: DM1 (GE)



Use

Flash Reducer DM1 is used when firing 203mm (8 in.) White Bag Propelling Charge DM22 (all zones). It is not used with Green Bag Propelling Charge DM12 which is flashless. The primary purpose is the reduction in muzzle flash to make accurate weapon location more difficult for the enemy. It is used in both night and daylight firings. A secondary effect is reduction of blast pressure at the muzzle.

Description:

The flash reducer is a square light brown cloth pad containing a 460g (1 lb) mixture of black powder and potassium sulphate or potassium nitrate. The assembly is sewn around each edge to prevent leakage of the contents, and through the center to increase tear resistance; the appearance is of two equal increments. The flash reducer is inserted under the tie straps at the forward end of the propelling charge at the time of firing.

Functioning:

The flash reducer is ignited by the burning propellant. The chemical combination of burning potassium and propellant serves to modify the flashing of gases at the muzzle of the weapon. The result is a reduction in brilliance and of blast overpressure at the muzzle.

Tabulated Data:

Type .....Chemical modifier
Weight.....460 kg (1 lb)
Diameter.....172 x 190 mm (6.7 x 7.5 in.)
Color .....Light brown w/black markings
Filler.....Potassium sulphate and black powder
Weapon M110, M110A1

Cannon M2A1E1, M201
Charge, propelling DM22

Temperature Limits:

Firing:
  Upper limit.....+125°F (+52°C)
Storage:
  Upper limit.....+145°F (+63°C)
Packing.....Not available
Packing Box:
  Weight .....Not available
  Dimensions .....Not available
  Cube.....Not available

Shipping and Storage Data:

Storage class/SCG.....1.1D
DOT shipping class.....A
DOT designation.....BLACK POWDER
DODAC .....Not available
Drawing number .....Not available

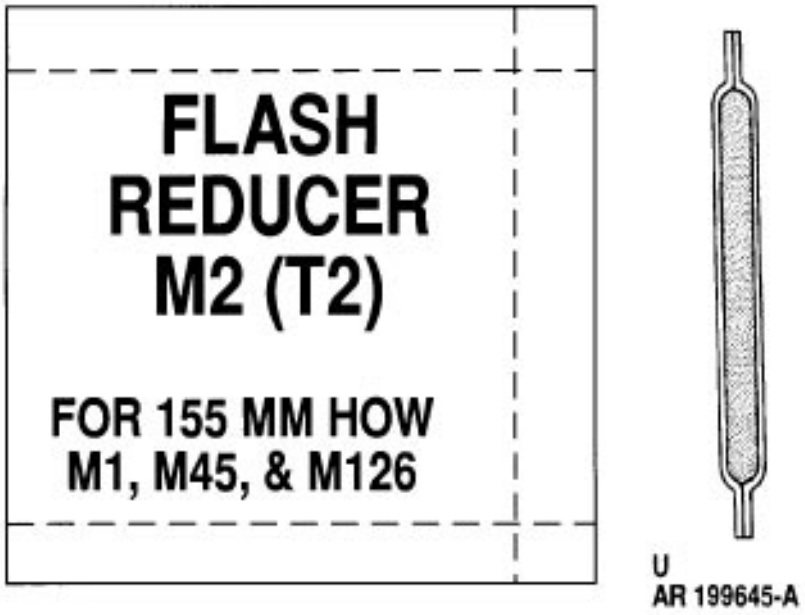
Limitations:

Not available

References:

Not available

REDUCER, FLASH: M2 (T2) (BE)



Type Classification

STD OTCM 31154 dtd 1946

Use

Flash Reducer M2 (T2) is used with White Bag Propelling Charge M4 and M4A1 in 155mm howitzer cannons, ordinarily on an optional basis. However, TB 9-1300-385 requires use of this flash reducer with certain specific lots of Propelling Charge M4. The primary purpose is the reduction of muzzle flash to make accurate weapon location more difficult for the enemy, A secondary effect is reduction of blast pressure at the muzzle. When used, one flash reducer is inserted at the forward end of each increment used, including the base charge. Even though Propelling charge M4A2 has an integral flash reducer assembled at Increment No. 3, the M2 (T2) may be used as a supplement with that charge also, if additional flash reduction is desired. No flash reducers are required when using Green Bag Propelling Charge M3.

Description:

Flash Reducer M2 (T2) consists of 1-1/2 ounces of black powder and potassium sulphate or potassium nitrate mixture in a 4-inch square bag of red cotton cloth. The edges are sewn together to prevent leakage of the chemical mixture.

Functioning:

The flash reducer is ignited by the burning propellant. When the black powder and potassium nitrate or potassium sulphate mixture burns in combination with the propelling charge, the chemical reaction causes a reduction in muzzle flash of the weapon. The likelihood of blast overpressure from the muzzle is also reduced. There is some increase in smoke at the weapon muzzle when the M2 (T2) is used.

Tabulated Data:

Weight.....0.06 lb
Dimensions .....4 x 4 in.
Cannon (weapons) used with.....M1, M1A1 (M114, M114A1); M45 (M44, M44A1); M126, M126A1 (M109); M185 (M109A1); M199 (M198)
Propelling charges usedwith M4, M4A1, M4A2

Temperature Limits:

Firing:
  Lower limit .....-40°F (-40°C)
  Upper limit.....+125°F (+52°C)
Storage:
  Lower limit .....-80°F (for period of not more than 3 days)
  Upper limit.....+160°F (for not more than 4 hr/day)
*Packing.....200 flash reducers in metal container; 4 containers in wooden box
*Packing Box:
  Weight .....68.2 lb
  Dimensions .....26-7/16 x 13 x 11-15/16 in.
  Cube.....2.37 cu ft

*NOTE: See SC for complete packing data including NSN's.

Shipping and Storage Data:

Quantity-distance class 1.1
Storage compatibility group.....D
DOT shipping class.....A
DOT designation.....BLACK POWDER
DODAC 1320-D552
Assembly drawing number 9229177

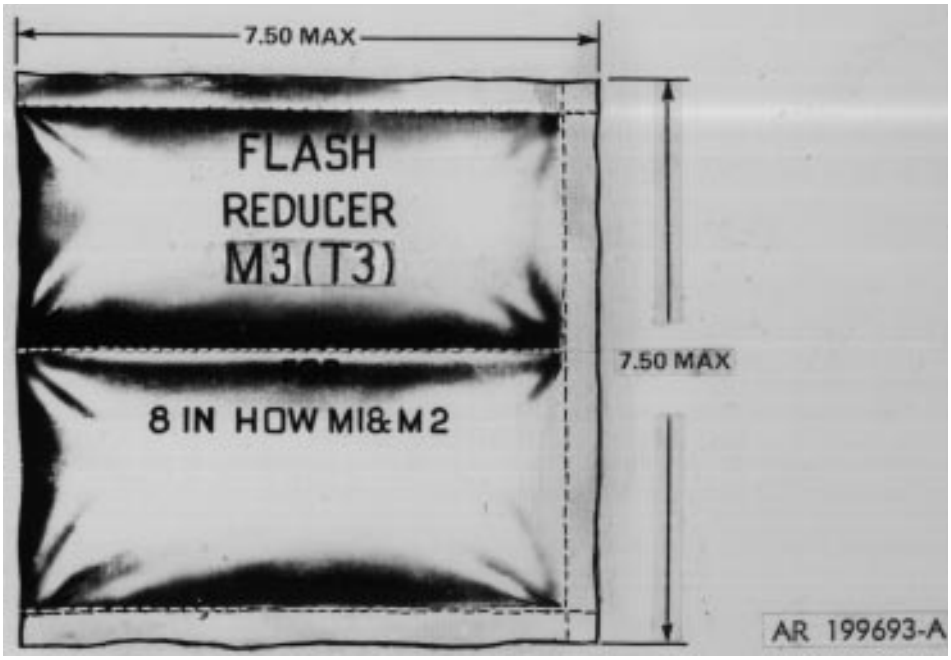
Preparation for Firing:

None

References:

AMCP 700-3-3
SB 700-20
SC 1305/30-IL
TM 9-1300-251-20

REDUCER, FLASH: M3, (NL AND BE)*



Type Classification

*US manufacture

Use

Flash Reducer M3 is used when firing 8-inch (203mm) White Bag Propelling Charge M2 (all zones). It is not used with Green Bag Propelling Charge M1 which is flashless. The primary purpose is the reduction in muzzle flash to make accurate weapon location more difficult for the enemy. It is used in both night and daylight firings. A secondary effect is reduction of blast pressure at the muzzle.

Description:

The flash reducer is a square red cloth pad containing a one pound (454 g) mixture of black powder and potassium sulphate or potassium nitrate. The assembly is sewn around each edge to prevent leakage of the contents, and through the center to increase tear resistance. Thus, the appearance is of two equal increments. The flash reducer is inserted under the tie straps at the forward end of the propelling charge at the time of firing.

Functioning:

The flash reducer is ignited by the burning propellant. The chemical combination of burning potassium and propellant serves to modify the flashing of gases at the muzzle of the weapon. The result is a reduction in brilliance and of the blast overpressure at the muzzle.

Tabulated Data:

Type .....Chemical modifier
Weight.....454 g (1 lb)
Dimensions .....190.5 x 190.5 mm (7-1/2 x 7-1/2 in.)
Color .....Red w/black markings
Filler.....Black powder and potassium sulphate or potassium nitrate
Weapon M110, M110A1
Cannon M2A2, M201
Charges used with .....03 mm (8 in.) Charge Propelling: M2

Temperature Limits:

Firing:
Lower limit .....-40°F (-40°C)
Upper limit.....+125°F (+70°C)
Storage:
Lower limit .....-80°F (-62°C) (for period of not more than 3 days)
Upper limit.....+160°F (-70°C) (for not more than 4 hr/day)
Packing.....10 flash reducers in metal carton; 1 carton in barier bag; 4 bags in wooden box
Packing Box:
Weight .....36.3 kg (80 lb)
Dimensions .....435 x 365 x 241 mm (17-1/8 x 14-3/8 x 9-1/2 in.)
Cube.....0.04 m^3 (1.35 ft^3)

Shipping and Storage Data:

Storage class/SCG.....1.1D
DOT shipping class.....A
DOT designation.....BLACK POWDER
DODAC .....Not available

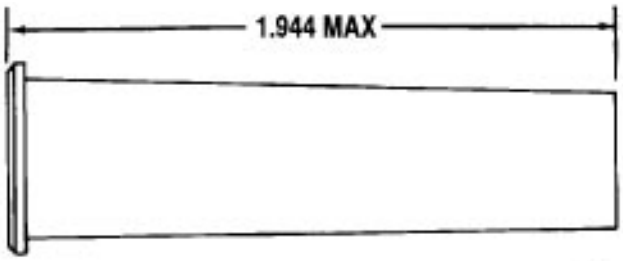
Limitations:

Not available

References:

TM 9-1300-251-20
TM 9-2300-216-10

PRIMER, PERCUSSION: M82 (NL, BE*, DE, GR, SP, UK)



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AR 199651

Type Classification

*US manufacture

Use

This primer is used to initiate burning of propellant charges in separate loading weapon systems.

Description:

The primer consists of a cylindrical brass case with an extraction flange which contains a plunger in the base, an ignition element, and a container loaded with 22 grains of black powder. The plunger has an integral striker and is activated by the breech mechanism firing pin. The ignition element is threaded into the primer case forward of the striker and contains a percussion primer. The primer contains primer mixture and an anvil, and is sensitive to impact from the plunger. The black powder container is also threaded into the case with the open end toward the ignition element. This end is sealed with a paper disc to prevent seepage of black powder granules.

Functioning:

The primer is inserted into the firing lock of the weapon. When struck in the base by the firing pin, the plunger is driven forward and initiates the primer in the ignition element. The primer flash ignites the black powder charge in the container assembly which flashes through the vent tube to ignite the black powder igniter at the base of the propelling charge.

Tabulated Data:

Type .....Percussion
Weight.....0.063 kg (0.14 lb)
Length .....49.3 mm (1.94 in.) (max)
Weapon:
  155mm M109, M109A1
  175mm M107
  8-in. (203mm).....M110, M110A1
Filler and weight .....Black powder, 22 grains (1.42 g)

Temperature Limits:

Firing:
- Lower limit .....-40°F (-40°C)
- Upper limit.....+125°F (+52°C)

Storage:
- Lower limit .....-80°F (-62°C) (for period of not more than 3 days)
- Upper limit.....+160°F (-70°C) (for not more than 4 hr/day)

Packing.....20 primers in fiberboard container; 25 containers in wooden box

Packing Box:
- Weight .....22.2 kg (49 lb)
- Dimensions .....613 x 305 x 289 mm (24-1/8 x 12 x 11-13/16 in.)
- Cube.....0.05 m^3 (1.8 ft^3)

Shipping and Storage Data:

Storage class/SCG.....(04) 1.2G
DOT shipping class.....C
DOT designation.....CANNON PRIMERS HANDLE CAREFULLY
DODAC .....Not available
Drawing number .....Not available

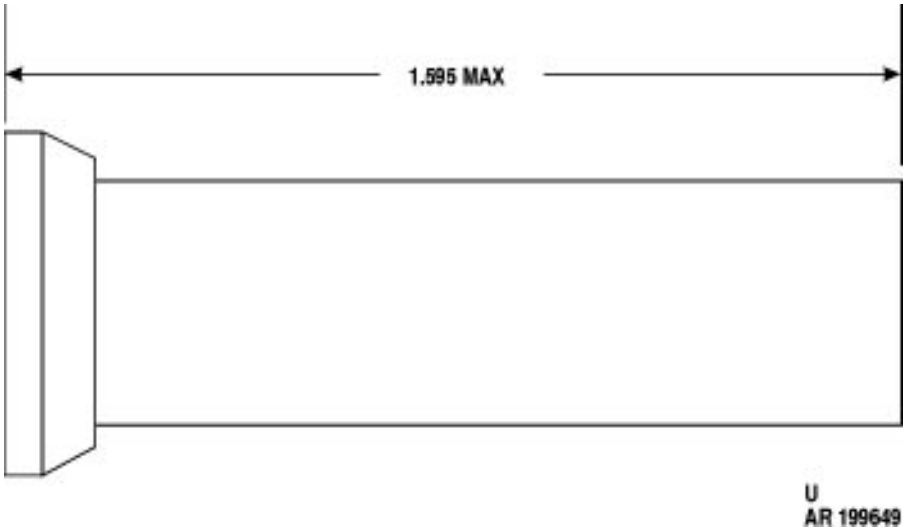
Preparation for Firing:

No preparation is required.

References:

TM 9-1300-206
TM 9-1300-251-20
TM 9-1300-251-34
TM 9-2300-216-10
TM 9-2350-217-10
TM 9-2350-217-10N

PRIMER, PERCUSSION: MK2A4 (NL, BE*, NO*, IT, DE, GR, UK, SP)



Type Classification

*US manufacture

Use

This primer is used with a variety of separate loading ammunition rounds to initiate burning of the propelling charge.

Description:

Percussion Primer MK2A4 is a brass cylinder with an extraction flange base, containing a charge of 19 grains of black powder. A primer cup in the center of the base contains a small quantity of sensitive primer composition. An anvil, gas check cone, and plug are installed between the primer cup and the black powder charge. The black powder is sealed in the primer case by a closing disc at the rear and a cork washer at the front end.

Functioning:

The primer is inserted into the firing lock of the weapon. When struck by the firing pin, the primer cup is indented, compressing the sensitive primer composition against the anvil. The primer composition detonates from the impact shock and flashes through a port in the plug to ignite the black powder charge in the primer case. The gas check cone prevents blowback in the event the primer cup is ruptured. The burning black powder charge initiates burning of the propelling charge.

Tabulated Data:

Type .....Percussion
Weight.....0.027 kg (0.06 lb)
Length .....40.5 mm (1.595 in.)
Diameter.....8.8 mm (0.348 in.)
Filler and weight .....Black powder, 19 grains (1.23 g)

Temperature Limits:

Firing:
- Lower limit .....-40°F (-40°C)
- Upper limit.....+125°F (+52°C)

Storage:
- Lower limit .....-80°F (-62°C) (for period of not more than 3 days)
- Upper limit.....+160°F (-70°C) (for not more than 4 hr/day)

Packing.....250 primers in shipping container; 2 containers in wirebound box

Packing Box:
- Weight .....16.8 kg (37 lb)
- Dimensions .....371 x 325 x 232 mm (14-5/8 x 12-13/16 x 9-1/8 in.)
- Cube.....0.028 m^3 (1 ft^3)

Shipping and Storage Data:

Storage class/SCG.....(04) 1.2G
DOT shipping class.....C
DOT designation.....CANNON PRIMERS HANDLE CAREFULLY
DODAC .....Not available

Limitations:

None

References:

DARCOM (AMC)-R 700-3-3
SB 700-20
SC 1305/30-IL
TM 1095-200-12
TM 9-1300-251-20